

laser chip for measuring an operating temperature.

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contd

17. (new) The semiconductor laser as recited in claim 16 wherein the at least one temperature sensor is secured by welding directly on or in the semiconductor laser chip, an energy for the welding coming from a light source.

18. (new) The semiconductor laser as recited in claim 17 wherein the light source includes at least one of a Nd-glass source, a Nd-YAG source and a source having a similar spatial distribution and similar spectral distribution to a Nd-glass source or a Nd-YAG source.

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19. (new) The semiconductor laser as recited in claim 17 wherein prior to the welding each of the at least one temperature sensor is sealed into an electrically insulating glass.

20. (new) The semiconductor laser as recited in claim 16 wherein each of the at least one temperature sensor is arranged and secured in a respective hole, each of the respective hole being formed in the laser chip using light-welding.

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21. (new) The semiconductor laser as recited in claim 16 wherein the at least one temperature sensor is included in the semiconductor laser chip, wires for measuring an electrical resistance through the semiconductor laser chip being mounted on the semiconductor laser chip.

22. (new) The semiconductor laser as recited in claim 21 wherein the wires for measuring the electrical resistance through the semiconductor laser chip include a pumping current lead wire and an additional wire used as a sensor supply lead.

23. (new) The semiconductor laser as recited in claim 16 wherein the at least one temperature sensor includes a thermoelement.

24. (new) The semiconductor laser as recited in claim 16 wherein the at least one

temperature sensor includes a thermoelement having two wires joined by laser-light welding and secured in a common work step to the semiconductor laser chip.

25. (new) The semiconductor laser as recited in claim 24 wherein a contact surface of a material of one of the wires is deposited on the semiconductor laser chip before the two wires are joined.

26. (new) The semiconductor laser as recited in claim 16 further comprising at least one second semiconductor laser chip forming a semiconductor laser array with the semiconductor laser chip, each of the at least one temperature sensors being disposed directly on or integrated in a respective one of the semiconductor laser chip and the at least one second semiconductor laser chip for measuring a respective operating temperature, an operating temperature of the semiconductor laser array being measurable by measuring the operating temperature of the semiconductor laser chip and of each of the at least one second semiconductor laser chip, a respective output wavelength of the semiconductor laser chip and of each of the at least one semiconductor laser chip being adjustable by varying their respective pumping currents.

27. (new) The semiconductor laser as recited in claim 16 wherein each of the at least one temperature sensor includes a respective thermoelement disposed directly on the semiconductor laser chip, each of the thermoelements being operatable in a reversed operation as a respective Peltier element having a current source for adjusting a respective temperature with local selectivity.

28. (new) The semiconductor laser as recited in claim 27 wherein the semiconductor laser chip includes an active laser zone having at least one measuring point for measuring a wavelength of the semiconductor laser chip so as to enable an adjusting of the wavelength.

29. (new) The semiconductor laser as recited in claim 28 wherein the semiconductor laser is included in a telecommunications laser and the semiconductor laser chip includes one measuring point in the active zone.

30. (new) The semiconductor laser as recited in claim 28 wherein the semiconductor laser is included in a high-performance laser and the semiconductor laser chip includes a plurality of measuring points along the active laser zone.

31. (new) The semiconductor laser as recited in claim 27 wherein the at least one temperature sensor includes at least two thermoelements operated and configured in a cascade arrangement.

32. (new) The semiconductor laser as recited in claim 16 wherein the measured operating temperature is used in a closed-loop control circuit including a setter for adjusting the operating temperature.

33. (new) The semiconductor laser as recited in claim 16 further comprising a respective temperature setter and a respective temperature controller associated with each of the at least one temperature sensor and disposed on the semiconductor laser chip.--

IN THE ABSTRACT

Please replace the abstract with the following new abstract:

--In a semiconductor laser, at least one temperature sensor is disposed directly on or integrated in a semiconductor laser chip for measuring an operating temperature. Precisely and/or locally solved measurement of the operating temperature of the laser are possible. One or more temperature sensors may be placed and fastened directly onto the laser chip or in a hole of the laser chip by welding, especially with Nd-YAG-laser light or light with similar characteristics. Fine equalization of temperature may be carried out, for example, by Peltier elements, components of the Peltier elements being mounted directly onto the laser chip. A cascaded arrangement of thermoelements and Peltier elements on a laser chip is also provided for.--
